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First record of Thysanophoridae from Brazil (Gastropoda, Stylommatophora)

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Abstract

The terrestrial gastropod family Thysanophoridae is reported herein for the first time from Brazil. The new record stems from a 2015 survey in the Reserva Biológica de Pedra Talhada, a protected Atlantic Forest fragment in Alagoas state, in the northeastern part of the country. Only two empty juvenile shells were found, and the specimens can be tentatively identified as *Thysanophora* cf. *plagioptycha* (Shuttleworth, 1854). Given the location is a reserve, this is potentially a natural occurrence and not a case of introduction.

Keywords

Alagoas, Atlantic Forest, *Lyroconus*, Reserva Biológica de Pedra Talhada, *Thysanophora plagioptycha*

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Introduction

Latin America has an astounding diversity of terrestrial gastropods (e.g., Simone 2006; Thompson 2011; Salvador 2019), counting among them numerous examples of endemic taxa but also several widespread ones. The latter are more usually smaller animals such as the Valloniidae and the Subulininae, with distributions ranging from Central America and the Caribbean to South America (e.g., Pilsbry 1930; Hausdorf 2007; Salvador et al. 2018b). Given the small proportion of malacological studies in relation to the extent of the territory and biodiversity (Salvador 2019), it is usual to find new records of species in any given country, especially in areas close to national borders (e.g., Silva et al. 2019; Lima et al. 2021).

However, reporting a new record of a family for a given country is extremely unusual. For instance, the family Vertiginidae was recently reported from a nature reserve in Brazil (Salvador et al. 2018b), but that was an exception in decades of malacological studies (e.g., Morretes 1949; Salgado and Coelho 2003; Simone 2006; Birckolz et al. 2016). The material studied by Salvador et al. (2018b) was collected in a large survey in the Reserva Biológica de Pedra Talhada ("Pedra Talhada Biological Reserve") in Alagoas state, which is one of the largest fragments of Atlantic Forest in northeastern Brazil. Notably, there was

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one species that was tentatively identified as *Strobilops* cf. *brasiliana* F.C. Baker, 1914 in that work that represents another new family-level record for Brazil.

Herein, based on comparison with type material, we correct the identification of "*Strobilops* cf. *brasiliana*" provided by Salvador et al. (2018b). Their specimens actually belong to the genus *Thysanophora* Strebel & Pfeffer 1880, representing the first record of family Thysanophoridae from Brazil.

Methods

The specimens used for the present paper are part of the study of Salvador et al. (2018b). They were collected in 2015 during a malacological survey of the Reserva Biológica de Pedra Talhada (henceforth Pedra Talhada; Fig. 1). The reserve is split between two Brazilian states: Pernambuco to the north and Alagoas to the south. The latter represents ca. 60% of the reserve's area and is the place where collection took place (permit ICMBio Sisbio #48925-2). Pedra Talhada is a fragment of Atlantic Forest of ca. 4400 ha interspersed with inselbergs; the altitude ranges from 450 to 900 m. More information about the reserve (vegetation, climate, etc.) can be found in Studer et al. (2015).

The material is housed in the malacological collection of the Museu de Zoologia da Universidade de São Paulo (MZSP, São Paulo, Brazil). SEM images were acquired in the Staatliches Museum für Naturkunde Stuttgart (SMNS; Stuttgart, Germany). The material was identified based on specialized literature (see below) and comparison with type material in the collections of the Naturhistorisches Museum Bern (NMBE, Bern, Switzerland) and the Academy of Natural Sciences of Drexel University (ANSP, Philadelphia, USA). For more information on sampling procedures, please refer to Salvador et al. (2018b).

Results

Thysanophora cf. *plagioptycha* (Shuttleworth, 1854)

New record. BRAZIL – **Alagoas** • Reserva Biológica de Pedra Talhada, field station PT2015-18; 09°15.571′S 036°25.275′W; alt. 575 m.; 25.IX.2015; P. Maestrati et al. leg.; 2 dry shells (juveniles), MZSP 133864.

Identification. The classification in the genus *Thysanophora* is straightforward, based on the small conico-globose shell, with the sculpture of both protoconch and teleoconch consisting of fine prosocline ribs (Fig. 2; Pilsbry 1920, 1940; Zilch 1959–1960; Schileyko 2006).

All available specimens from Pedra Talhada are juveniles, so identification must remain somewhat tentative, given that the body whorl bears important diagnostic features such as the aperture shape and the size of the umbilicus (Pilsbry 1920; Dourson et al. 2018). The present specimens are reminiscent of two species: *Thysanophora plagioptycha* (Shuttleworth, 1854), originally described from Puerto Rico, and *Thysanophora caecoides* (Tate, 1870), originally described from Guatemala.

The specimens from Pedra Talhada were compared to the type material of each of the above-mentioned species (NMBE 18878, syntype of *T. plagioptycha*; ANSP 12159, lectotype of *T. caecoides*), as well as to published illustrations in the literature (Pilsbry 1920, 1940; van der Schalie 1948; Neubert and Gosteli 2003; Dourson et al. 2018). We are inclined towards the identification as *T. plagioptycha* due to the apparent broader and shorter whorls, larger umbilicus, and smaller aperture when compared to typical *T. caecoides*. Furthermore, the latter is restricted to Central America, while the former ranges from Florida to Colombia and Venezuela (Baker 1926; Pilsbry 1940; Thompson 2011). We acknowledge, however, that the finding of adult specimens might overturn the present identification.

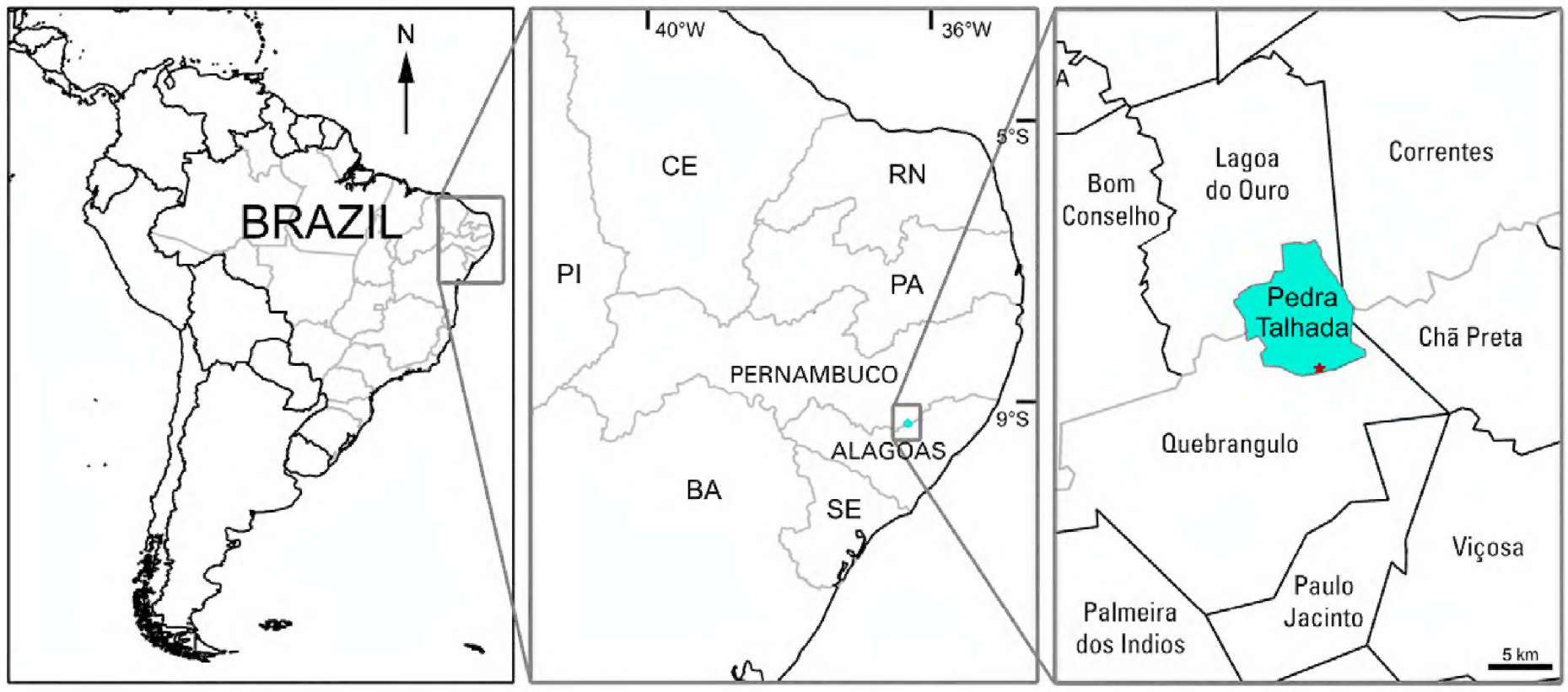

Figure 1. Map showing the location of Reserva Biológica de Pedra Talhada, between the northeastern Brazilian states of Pernambuco and Alagoas. The star in the leftmost map indicates the collection locality of the present specimens. Abbreviations: BA, Bahia state; CE, Ceará state; PA, Paraíba state; PI, Piauí state; RN, Rio Grande do Norte state; SE, Sergipe state.

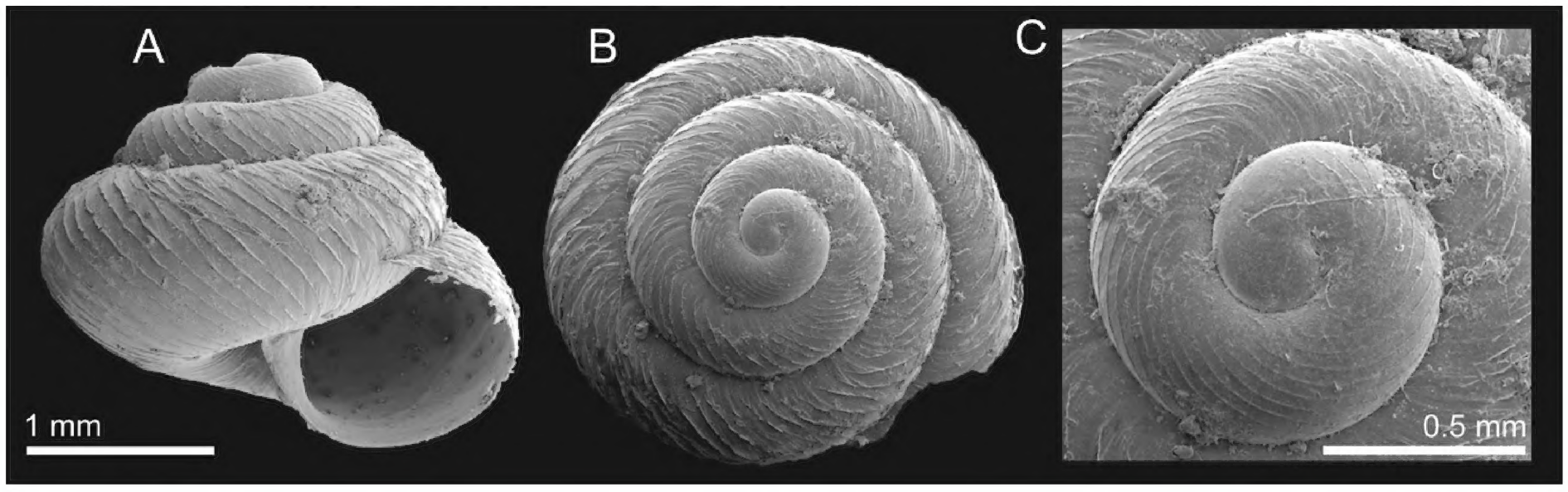

Figure 2. *Thysanophora plagioptycha*, MZSP 133864. **A.** Apertural view. **B.** Apical view. **C.** Detail of protoconch.

Both *T. plagioptycha* and *T. caecoides* belong to the subgenus *Lyroconus* H.B. Baker, 1927 in the genus *Thysanophora* Strebel & Pfeffer, 1880 (Stylommatophora, Helicoidea, Thysanophoridae). *Lyroconus* is sometimes treated as a distinct genus (e.g., Espinosa and Robinson 2021), but we opt to follow the majority of the taxonomic literature until a revisionary work is published.

Discussion

The present report consists in the first record of Thysanophoridae in Brazil, a family that is typically restricted to North and Central America, with a few sparse records in northern South America (Schileyko 2006). The present specimens were tentatively identified as *Thysanophora* cf. *plagioptycha*. This species was thus far known from southern USA (Texas and Florida), through Central America and the Caribbean islands to Colombia and Venezuela (Baker 1926; Pilsbry 1940; Thompson 2011). An additional unpublished record from 2020 is known from Saül, in French Guiana (O. Gargominy, pers. comm. 2021; specimens housed in the Muséum national d'Histoire naturelle, MNHN, Paris, France).

As Pilsbry (1930, 1940) had noted, *T. plagioptycha* lives on plants and might be easily transported; as such, its ample distribution of (like that of other minute Neotropical snails) could be either natural or due to transport by humans. Furthermore, transport might have occurred at any time by either Paleo-Americans or Europeans. For instance, van der Schalie (1948) argued that the presence of *T. plagioptycha* in the Caribbean could have been the result of transport from the mainland. In any event, the presence of *T.* cf. *plagioptycha* in a nature reserve such as Pedra Talhada could preclude the hypothesis of recent introduction. However, the station where the present specimens were found is located in the reserve's southern border (Fig. 1), close to anthropically disturbed areas (Salvador et al. 2018b). That matter will only be settled through genetic analysis, and the current report will hopefully serve as an alert to future collectors to acquire live specimens in the field.

If we favor the hypothesis of natural occurrence, the family Thysanophoridae is the 30th family of native land snails identified from Brazil (Salvador 2019; Salvador et al. 2020; Silva et al. 2020), excluding fossils (Salvador et al. 2018a).

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